BLUE ROCK ENVIRONMENTAL, INC.

FILE COPY

Ms. Kasey Ashley
NCRWQCB
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

November 4, 2005

**Re: Fourth Quarter 2005 Groundwater Monitoring Report**
**Former Beaver Lumber Company**
**1220 Fifth Street, Arcata, CA**
**NCRWQCBCase No. 1NHU001**
**Blue Rock Project No. NC-1**

Dear Ms. Ashley,

This report presents the results of the fourth quarter 2005 groundwater monitoring activities at 1220 Fifth Street, Arcata, Humboldt County, California (site) (Figure 1), and was prepared for Mr. Bradford C. Floyd by Blue Rock Environmental, Inc. (Blue Rock).

## Background

### Site Description

The site is located at the western end of Fifth Street, between State Highway 255 and the railroad tracks, in the town of Arcata, California (Figure 1). The site consists of a metal framed building surrounded by asphalt pavement and gravel surfacing (Figure 2). The site is surrounded by industrial, commercial, agricultural, and residential properties. Prior to the construction of the waste transfer station and truck scale, the site was paved with asphalt and used as a log deck for the former adjacent saw mill.

### Site History

In September 1998, approximately 1,200 cubic yards of sand and gravel fill material and 3,500 cubic yards of silty clay soil were excavated from the site to facilitate the construction of a waste transfer station. Kernen Construction Company (Kernen) removed site soils from ground surface to 4 feet below ground surface (bgs) in the two excavation locations shown in Figure 2. Engineered fill was then placed in these locations to meet building code requirements. The excavated soil was stockpiled on asphalt near the excavation. The soils were scheduled to be hauled to Cummings Road Landfill in Eureka, California to be used as cover soil.

On September 9, 1998, trucks containing site soils were turned away from the Cummings Road Landfill because the site supervisor observed that the soil appeared dark and had an oily smell. The soil was then hauled to Kernen's construction facility in Glendale, California for temporary storage.

In a September 16, 1998 letter, the City Garbage Company of Eureka informed the Humboldt County Division of Environmental Health (HCDEH) that soils from the site were refused and appeared to have an oily smell.

On September 22, 1998, Kernen collected four soil samples from the soil stockpile. These samples (1, 2, 3, and 4) were analyzed for total petroleum hydrocarbons as diesel (TPHd) and sample 3 was also analyzed for hydrocarbon oil and grease (O&G). Low levels of TPHd and O&G were detected in these samples. These laboratory results were forwarded to the HCDEH.

On October 6, 1998, the Humboldt Solid Waste Management Authority (HCWMA), which was leasing the site, and the HCDEH had a meeting to discuss the disposition of the soil stockpiled at Kernen's facility.

In a letter dated October 9, 1998, the HCDEH informed the HCWMA of options for handling the soils.

On October 13, 1998, Winzler and Kelly collected six soil samples (5, 6, 7, 8, 9, and 10) from the stockpiled soil for disposal profiling.

In December 1998, the NCRWQCB authorized the HCWMA to bioremediate site soils on an asphalt paved portion of the Humboldt County Road Department lease property located on the eastern edge of the Arcata Airport.

In a letter dated July 5, 2000, the NCRWQCB sent a reminder request to the HCWMA for the necessary submittal a report of waste discharge and final disposal plan.

In a letter dated December 29, 2000, the NCRWQCB requested the property owner to prepare a workplan to determine the extent soil contamination and if groundwater has been impacted in reference to the locations of excavated soils.

On March 19, 2003, Clearwater Group (Clearwater) reviewed aerial photos of the site from 1996 and interviewed the site contractor that performed the soil excavation activities. Clearwater interpreted aerial photos from 1996 to indicate that the site was previously used as a log deck and storage of heavy equipment and machinery. The site contractor indicated that the site prior to construction contained scattered wood waste on top of asphalt surfacing and below the asphalt consisted of sand and gravel fill from below asphalt to approximately 1 foot bgs and gray silty clay from 1 foot bgs to total excavated depth of 4 feet bgs. Soil was excavated 5 feet beyond the footprint of the buildings shown in Figure 2.

Clearwater submitted a *Preliminary Site Investigation Workplan*, dated March 31, 2003, to the NCRWQCB. The workplan proposed to evaluate the extent of petroleum hydrocarbon contamination in subsurface soil and groundwater peripheral to the two "September 1998" soil excavation areas (Figure 2). The workplan proposed to complete the investigation through the

installation of five shallow soil borings with the collection of grab groundwater samples. This workplan was approved by the NCRWQCB in a letter dated May 13, 2003.

On June 12, 2003, Clearwater supervised the advancement of five soil borings associated with the subject property: SB-1 through SB-5 (Figure 2). These soil borings were placed in locations to assess the sorbed-phase hydrocarbon contamination associated with the site. Grab groundwater samples were collected from each boring to evaluate dissolved-phase hydrocarbon contamination associated with the site. These borings were advanced to 15 feet bgs. Based on soil stockpile analytical results and area of excavation, Clearwater calculated that approximately 395 gallons of motor oil was removed from the site in 1998. Results of this investigation are presented in Clearwater's *Preliminary Site Investigation Report*, dated August 11, 2003. The NCRWQCB commented on this *Report* in a site correspondence letter dated August 28, 2003, requesting preparation of a Workplan to define the extent of contamination and requesting lower detection limits for TPHmo. Clearwater had the laboratory revise the laboratory report to reflect the requested detection limit for TPHmo in groundwater samples collected on June 12, 2003.

Clearwater submitted a *Workplan for Additional Investigation*, dated September 29, 2003, to the NCRWQCB. The *Workplan* proposed the installation of four groundwater monitoring wells proximal to soil boring SB-2 to evaluate hydrocarbon distribution and establish a groundwater gradient and flow direction. This *Workplan* was approved with comments by the NCRWQCB in a letter dated October 31, 2003.

On January 10, 2005, Blue Rock supervised the installation of four monitoring wells associated with the subject site: MW-1 to MW-4 (Figure 2). These monitoring wells were placed in locations to assess the hydrocarbon contamination and establish a groundwater gradient associated with the site. These borings were advanced to 15 feet bgs.

**Groundwater Monitoring Field and Laboratory Activities**

Groundwater Monitoring Activities

On August 19, September 14, and October 27, 2005, all four wells (MW-1 through MW-4) were gauged and samples were collected on October 27, 2005.

Prior to sampling, an electronic water level indicator was used to gauge depth to water in each well, accurate to within ±0.01-foot. All wells were checked for the presence of light non-aqueous phase liquid (LNAPL) petroleum prior to purging. No measurable thicknesses of LNAPL were observed on groundwater in any of the wells.

In preparation for sampling, the wells were purged of groundwater until sampling parameters (temperature, pH, and conductivity) stabilized.

Following recovery of water levels to approximately 80% of their static levels in the other wells, groundwater samples were collected from the wells using disposable polyethylene bailers and

transferred to laboratory supplied containers. Sample containers were labeled, documented on a chain-of-custody form, and placed on ice in a cooler for transport to the project laboratory.

Purging instruments were cleaned between use by an Alconox® wash followed by double rinse in clean tap water to prevent cross-contamination. Purge and rinseate water was stored on-site in labeled 55-gallon drums pending future removal and disposal.

Groundwater monitoring and well purging information is presented on Gauge Data/Purge Calculations and Purge Data sheets (attached).

Groundwater Sample Analyses

Groundwater samples were analyzed by Kiff Analytical (Kiff), a DHS-certified laboratory, located in Davis, California, for the following analytes:

- TPHmo by EPA Method 8015M with silica gel cleanup.
- TPHd by EPA Method 8015M with silica gel cleanup.
- BTEX by EPA Method 8260B.

**Groundwater Monitoring Results**

Groundwater Flow Direction and Gradients

On August 19, 2005, static groundwater in the wells was present beneath the site at depths ranging from approximately 4.51 (MW-3) to 5.66 (MW-4) feet bgs. Gauging data, combined with well elevation data, were used to calculate groundwater elevation, and to generate a groundwater elevation and gradient map. The groundwater flow direction was calculated to be toward the north at a gradient of 0.012 ft/ft (Figure 3a).

On September 14, 2005, static groundwater in the wells was present beneath the site at depths ranging from approximately 4.98 (MW-2) to 6.05 (MW-4) feet bgs. Gauging data, combined with well elevation data, were used to calculate groundwater elevation, and to generate a groundwater elevation and gradient map. The groundwater flow direction was calculated to be toward the north at a gradient of 0.018 ft/ft (Figure 3b).

On October 27, 2005, Static groundwater in the wells was present beneath the site at depths ranging from approximately 4.98 (MW-3) to 6.24 (MW-4) feet bgs. Gauging data, combined with well elevation data, were used to calculate groundwater elevation, and to generate a groundwater elevation and gradient map. The groundwater flow direction was calculated to be toward the wqest-northwest at a gradient of 0.0062 ft/ft (Figure 3c).

Groundwater Contaminant Analytical Results

LNAPL: None
TPHmo concentration: <100 micrograms per liter (µg/L) (MW-1 to MW-4)
TPHd concentration: <50 µg/L (MW-1 to MW-4)
Benzene concentration: <0.50 µg/L (MW-1 to MW-4)

Groundwater sample analytical results are shown graphically on Figure 4, and groundwater sample analytical results are summarized in Table 1. Well construction details are summarized in Table 2. Copies of the laboratory report and chain-of-custody form are attached.

Remarks
Groundwater sample analytical results were below the standard detection limits for each analysis.

**Trend Evaluation for Groundwater Contaminant Levels and Distribution**

Trend Evaluation of Dissolved-Phase Contaminant Concentrations
In order to evaluate the rate of attenuation and when contaminants of concern will reach NCRWQCB clean-up Goals, concentrations of contaminants at MW-1, MW-2, and MW-4, were plotted against time for four consecutive quarters. These data were fit with trend lines and associated equations in the method shown in Buscheck, O'Reilly, and Nelson 1993:

$$C(t) = C_0 e^{-(kt)}$$

Where,
C(t) is concentration as a function of time (t)
$C_0$ = is concentration as t = 0
k = is the decay rate ($t^{-1}$)

The following table summarizes the results:

| **Well** | TPHmo **Decay Rate ($day^{-1}$)** | **Estimated Year Clean-up Goal Met** |
|---|---|---|
| MW-1 | -0.0042* | Already Met |
| MW-2 | -0.0017* | Already Met |
| MW-4 | -0.0033* | Already Met |

Notes:
* = $R^2$ value <0.75. Although the equation producing the decay rate is <0.75, qualitative inspection of the plot indicates concentrations are decreasing.

Trend Evaluation of Dissolved-Phase Contaminant Distribution

The extent of the dissolved-phase contaminant plume associated with the site was examined over the life of the project. The dissolved-phase plume appears to be decreasing over time.

## Project Status

- The site is currently being monitored on a monthly and quarterly basis per the NCRWQCB directives. Groundwater samples will be analyzed for TPHmo, TPHd, and BTEX.

## Project Recommendations

- Based on the attached first-order contaminant decay rates, Blue Rock recommends preparing a site closure summary.

## References

Buscheck, T.E., O'Reilly, K.T., and Nelson, S.N. 1993. *Evaluation of Intrinsic Bioremediation at Field Sites*. Proceedings of the Conference of Petroleum Hydrocarbons and Organic Chemicals in Ground Water, National Groundwater Association/API, Houston, TX. November 10-12.

**Certification**

This report was prepared under the supervision of a California Professional Geologist at Blue Rock. All statements, conclusions, and recommendations are based upon published results from past consultants, field observations by Blue Rock, and analyses performed by a state-certified laboratory as they relate to the time, location, and depth of points sampled by Blue Rock. Interpretation of data, including spatial distribution and temporal trends, are based on commonly used geologic and scientific principles. It is possible that interpretations, conclusions, and recommendations presented in this report may change, as additional data become available and/or regulations change.

Information and interpretation presented herein are for the sole use of the client and regulating agency. The information and interpretation contained in this document should not be relied upon by a third party.

The service performed by Blue Rock has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

If you have any questions regarding this project, please contact us at (707) 441-1934.

Sincerely,
Blue Rock Environmental, Inc.

Prepared by:

Scott Ferriman
Project Scientist

Reviewed by:

Brian Gwinn, PG
Principal Geologist

Attachments:
Table 1: Groundwater Elevations and Analytical Results
Table 2: Well Construction Details
Figure 1: Site Location Map
Figure 2: Site Plan
Figure 3a: Groundwater Elevations and Gradient – 8/19/05
Figure 3b: Groundwater Elevations and Gradient – 9/14/05
Figure 3c: Groundwater Elevations and Gradient – 10/27/05
Figure 4: Dissolved-Phase Hydrocarbon Distribution – 10/27/05
First-Order Contaminant Decay Rates
Blue Rock's Gauge/Purge Calculations and Well Purging Data Field Sheets
Laboratory Analytical Reports and Chain-of-Custody Form

Distribution:

Mr. Bradford C. Floyd
819 Seventh Street
Eureka, CA 95501

**Table 1**
**GROUNDWATER ELEVATIONS AND**
**ANALYTICAL RESULTS**
Former Beaver Lumber Company
1220 Fifth Street
Arcata, California
Blue Rock Project No. NC-1

| Sample ID | Sampling Date | TOC (feet) | DTW (feet) | GWE (feet) | TPHmo (µg/L) | TPHd (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|
| SB-1 | 6/12/03 | -- | -- | -- | <175 | <50 | <0.5 | <0.5 | <0.5 | <1 |
| SB-2 | 6/12/03 | -- | -- | -- | **4,000** | <200 | <0.5 | <0.5 | <0.5 | <1 |
| SB-3 | 6/12/03 | -- | -- | -- | <175 | <50 | <0.5 | <0.5 | <0.5 | <1 |
| SB-4 | 6/12/03 | -- | -- | -- | <175 | <50 | <0.5 | <0.5 | <0.5 | <1 |
| SB-5 | 6/12/03 | -- | -- | -- | <175 | <50 | <0.5 | <0.5 | <0.5 | <1 |
| MW-1 | 1/17/05 | 13.22 | 4.03 | 9.19 | **280*** | **86*** | <0.5 | <0.5 | <0.5 | <0.5 |
| | 2/7/05 | 13.22 | 3.96 | 9.26 | -- | -- | -- | -- | -- | -- |
| | 3/10/05 | 13.22 | 4.00 | 9.22 | -- | -- | -- | -- | -- | -- |
| | 4/19/05 | 13.22 | 3.81 | 9.41 | **390*** | **73*** | <0.5 | <0.5 | <0.5 | <0.5 |
| | 5/16/05 | 13.22 | 3.75 | 9.47 | -- | -- | -- | -- | -- | -- |
| | 6/15/05 | 13.22 | 4.06 | 9.16 | -- | -- | -- | -- | -- | -- |
| | 7/5/05 | 13.22 | 4.14 | 9.08 | **170*** | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| | 8/19/05 | 13.22 | 5.08 | 8.14 | -- | -- | -- | -- | -- | -- |
| | 9/14/05 | 13.22 | 5.45 | 7.77 | -- | -- | -- | -- | -- | -- |
| | 10/27/05 | 13.22 | 5.98 | 7.24 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-2 | 1/17/05 | 12.73 | 3.54 | 9.19 | **210*** | **60*** | <0.5 | <0.5 | <0.5 | <0.5 |
| | 2/7/05 | 12.73 | 3.48 | 9.25 | -- | -- | -- | -- | -- | -- |
| | 3/10/05 | 12.73 | 3.52 | 9.21 | -- | -- | -- | -- | -- | -- |
| | 4/19/05 | 12.73 | 3.33 | 9.40 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| | 5/16/05 | 12.73 | 3.26 | 9.47 | -- | -- | -- | -- | -- | -- |
| | 6/15/05 | 12.73 | 3.58 | 9.15 | -- | -- | -- | -- | -- | -- |
| | 7/5/05 | 12.73 | 3.67 | 9.06 | **220*** | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| | 8/19/05 | 12.73 | 4.61 | 8.12 | -- | -- | -- | -- | -- | -- |
| | 9/14/05 | 12.73 | 4.98 | 7.75 | -- | -- | -- | -- | -- | -- |
| | 10/27/05 | 12.73 | 5.57 | 7.16 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-3 | 1/17/05 | 12.17 | 2.77 | 9.40 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| | 2/7/05 | 12.17 | 2.83 | 9.34 | -- | -- | -- | -- | -- | -- |
| | 3/10/05 | 12.17 | 2.75 | 9.42 | -- | -- | -- | -- | -- | -- |
| | 4/19/05 | 12.17 | 2.37 | 9.80 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| | 5/16/05 | 12.17 | 2.30 | 9.87 | -- | -- | -- | -- | -- | -- |
| | 6/15/05 | 12.17 | 2.80 | 9.37 | -- | -- | -- | -- | -- | -- |
| | 7/5/05 | 12.17 | 3.00 | 9.17 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| | 8/19/05 | 12.17 | 4.51 | 7.66 | -- | -- | -- | -- | -- | -- |
| | 9/14/05 | 12.17 | 5.13 | 7.04 | -- | -- | -- | -- | -- | -- |
| | 10/27/05 | 12.17 | 4.98 | 7.19 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |

**Table 1**
**GROUNDWATER ELEVATIONS AND**
**ANALYTICAL RESULTS**
Former Beaver Lumber Company
1220 Fifth Street
Arcata, California
Blue Rock Project No. NC-1

| Sample ID | Sampling Date | TOC (feet) | DTW (feet) | GWE (feet) | TPHmo (µg/L) | TPHd (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-4 | 1/17/05 | 13.80 | 4.62 | 9.18 | **430*** | **99*** | <0.5 | <0.5 | <0.5 | <0.5 |
| | 2/7/05 | 13.80 | 4.55 | 9.25 | -- | -- | -- | -- | -- | -- |
| | 3/10/05 | 13.80 | 4.57 | 9.23 | -- | -- | -- | -- | -- | -- |
| | 4/19/05 | 13.80 | 4.39 | 9.41 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| | 5/16/05 | 13.80 | 4.34 | 9.46 | -- | -- | -- | -- | -- | -- |
| | 6/15/05 | 13.80 | 4.64 | 9.16 | -- | -- | -- | -- | -- | -- |
| | 7/5/05 | 13.80 | 4.74 | 9.06 | **540*** | **110*** | <0.5 | <0.5 | <0.5 | <0.5 |
| | 8/19/05 | 13.80 | 5.66 | 8.14 | -- | -- | -- | -- | -- | -- |
| | 9/14/05 | 13.80 | 6.05 | 7.75 | -- | -- | -- | -- | -- | -- |
| | 10/27/05 | 13.80 | 6.24 | 7.56 | <100* | <50* | <0.5 | <0.5 | <0.5 | <0.5 |
| | | | | MCL | -- | -- | 1 | 150 | 300 | 1,750 |
| | | | | Taste & odor threshold | -- | 100 | -- | 42 | 29 | 17 |
| | | | | Cleanup Goals | 175 | 100 | 0.5 | 42 | 29 | 17 |

**Notes :**

TOC: Top of casing referenced to feet above mean sea level (msl).

DTW: Depth to water as referenced to top of well casing.

GWE: Groundwater elevation as referenced to established benchmark.

TPHmo: Total Petroleum Hydrocarbons as motor oil by EPA Method 3510/8015M (* indicates silica gel cleanup).

TPHd: Total Petroleum Hydrocarbons as diesel by EPA Method 3510/8015M (* indicates silica gel cleanup).

BTEX: Benzene, toluene, ethylbenzene, and xylenes by EPA method 8020 and 8260B.

µg/L: micrograms per liter = ppb = parts per billion

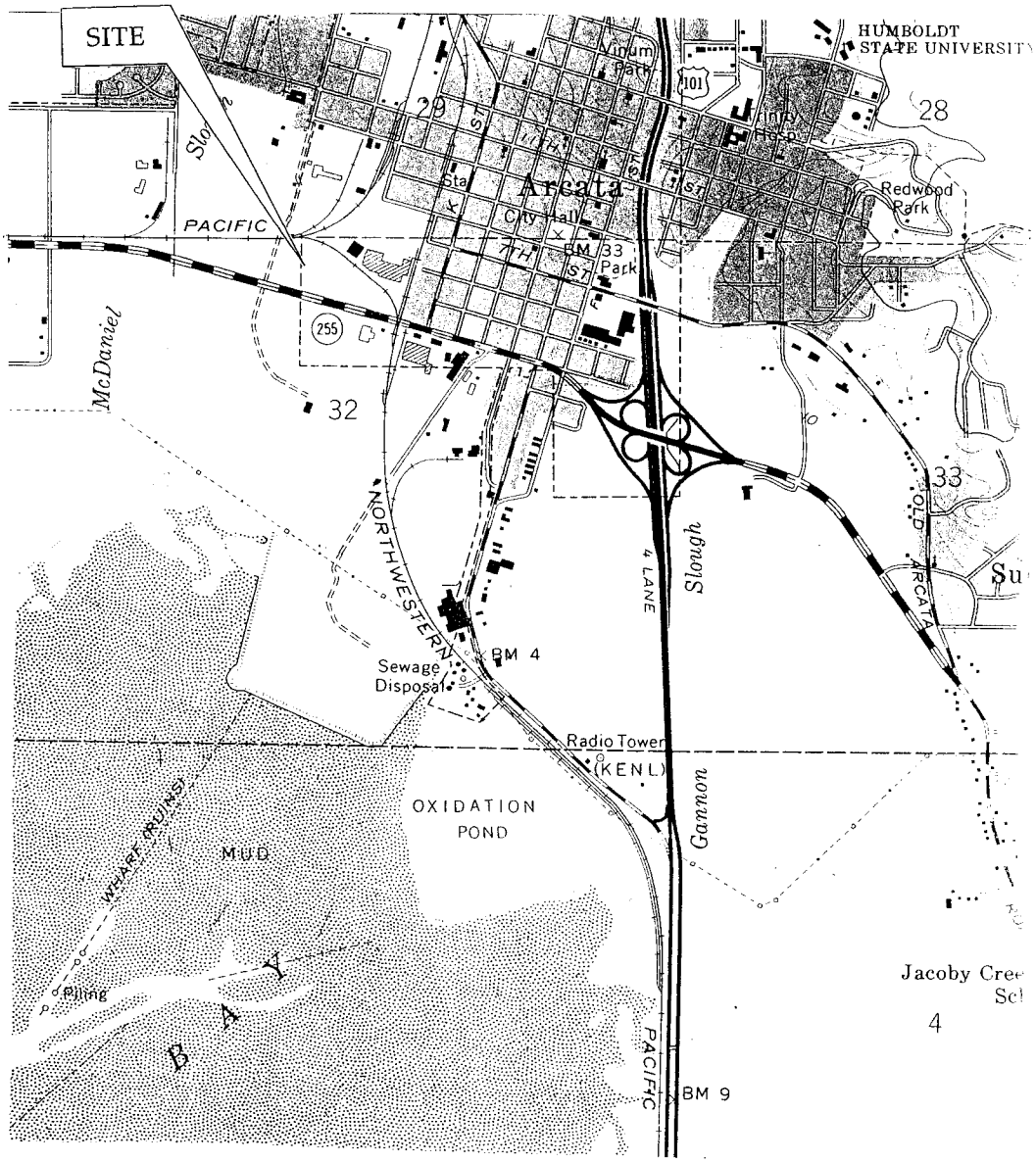
"--": Not analyzed, available, or applicable

MCL: Maximum contaminant level, a Federal drinking water standard based on health, technology and economics.

Taste & odor threshold: A drinking water standard

**Table 2**
**WELL CONSTRUCTION DETAILS**
Former Beaver Lumber Company
1220 Fifth Street
Arcata, California
Blue Rock Project No. NC-1

| Well Identification | Date Intstalled | Intstalled by | Casing Diameter (inches) | Total Depth (feet) | Blank Interval (feet) | Screened Interval (feet) | Slot Size (inches) | Filter Pack (feet) | Bentonite Seal (feet) | Cement (feet) |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 1/10/05 | Blue Rock | 2 | 15 | 0-3 | 3-15 | 0.01 | 2-15 | 1-2 | 0-1 |
| MW-2 | 1/10/05 | Blue Rock | 2 | 15 | 0-3 | 3-15 | 0.01 | 2-15 | 1-2 | 0-1 |
| MW-3 | 1/10/05 | Blue Rock | 2 | 15 | 0-3 | 3-15 | 0.01 | 2-15 | 1-2 | 0-1 |
| MW-4 | 1/10/05 | Blue Rock | 2 | 15 | 0-3 | 3-15 | 0.01 | 2-15 | 1-2 | 0-1 |




SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET

N

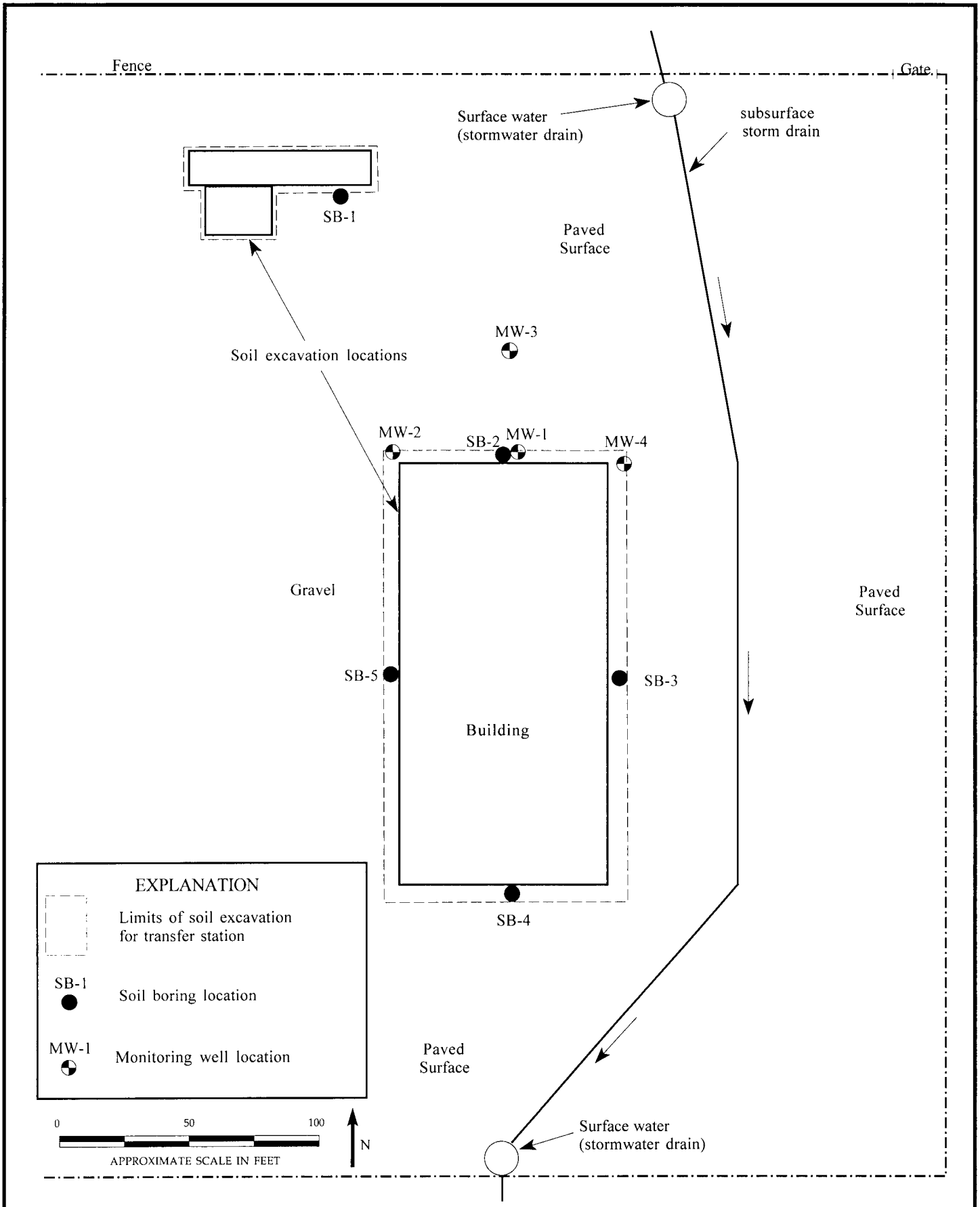
MAP SOURCE: USGS Arcata South, CA Quadrangle

# Site Location Map

Former Beaver Lumber Company
1220 Fifth Street
Arcata, California

BLUE ROCK ENVIRONMENTAL, INC.

| Project No. | Date | Figure |
|---|---|---|
| NC-1 | 1/05 | 1 |

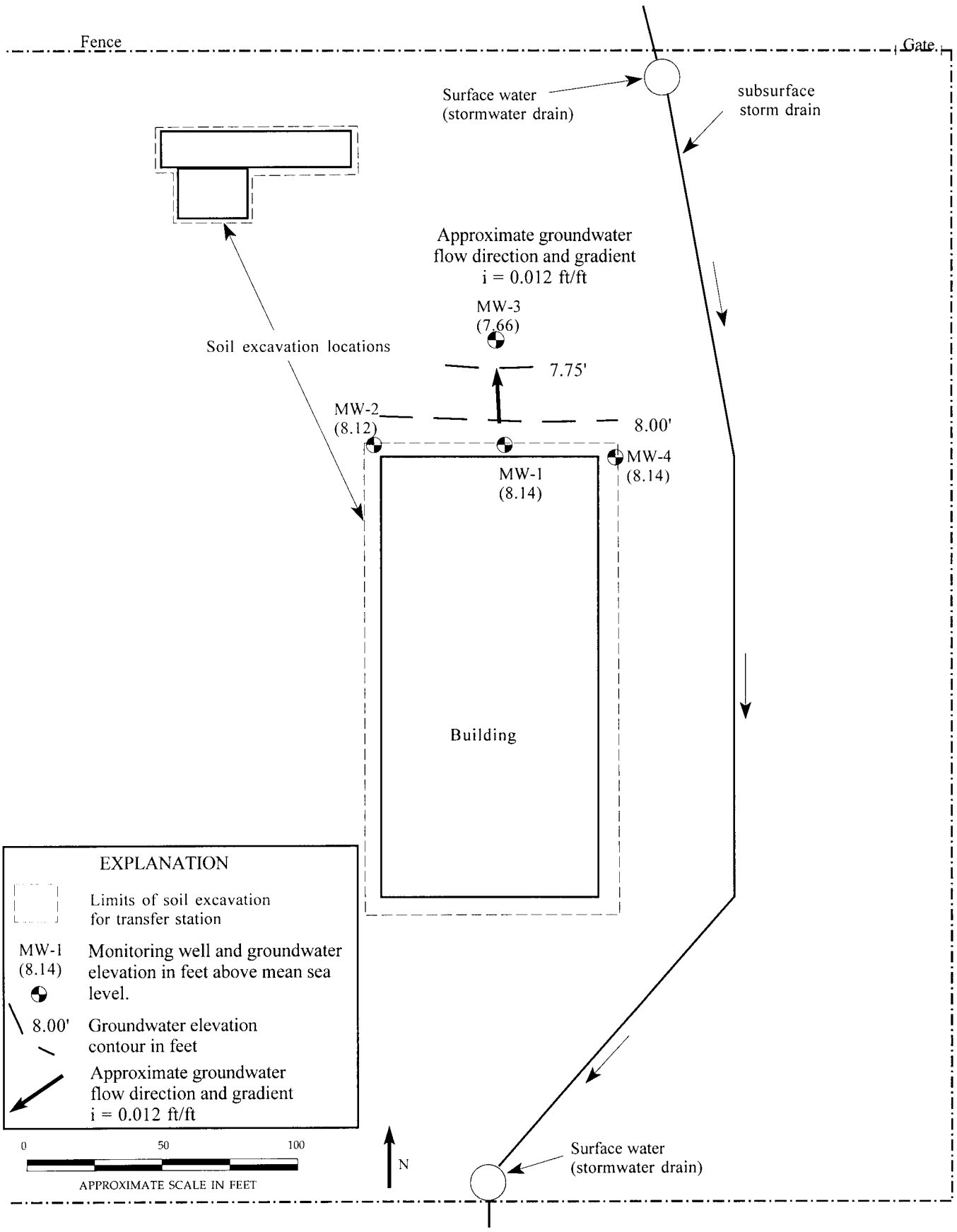



**Site Plan**

Former Beaver Lumber Company
1220 Fifth Street
Arcata, California

BLUE ROCK ENVIRONMENTAL, INC.

| Project No. | Report Date | Figure |
|---|---|---|
| NC-1 | 11/05 | 2 |

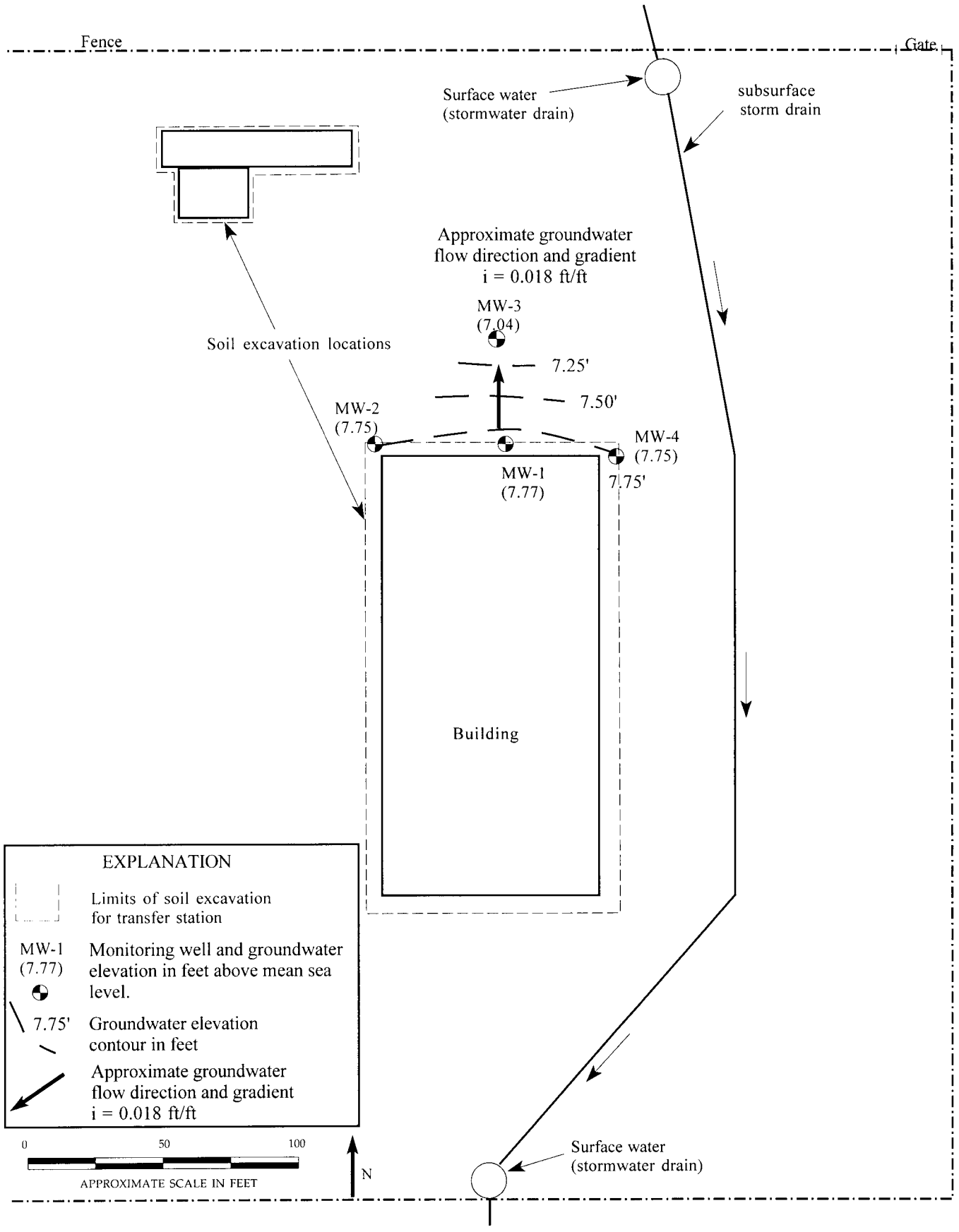



**Groundwater Elevations and Gradient - 8/19/05**

Former Beaver Lumber Company
1220 Fifth Street
Arcata, California

BLUE ROCK ENVIRONMENTAL, INC.

| Project No. | Report Date | Figure |
|---|---|---|
| NC-1 | 11/05 | 3a |

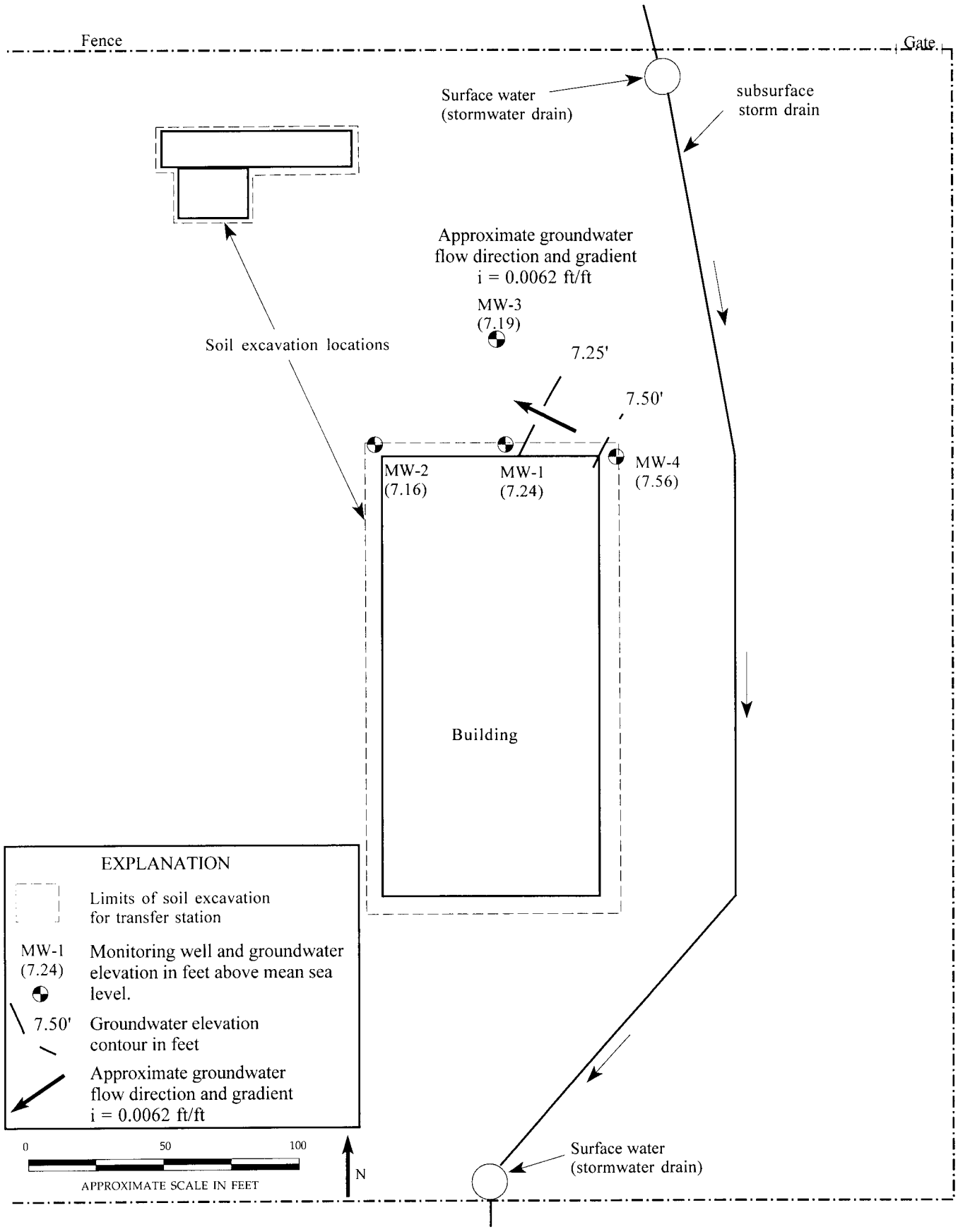



**Groundwater Elevations and Gradient - 9/14/05**

Former Beaver Lumber Company
1220 Fifth Street
Arcata, California

BLUE ROCK ENVIRONMENTAL, INC.

| Project No. | Report Date | Figure |
|---|---|---|
| NC-1 | 11/05 | 3b |

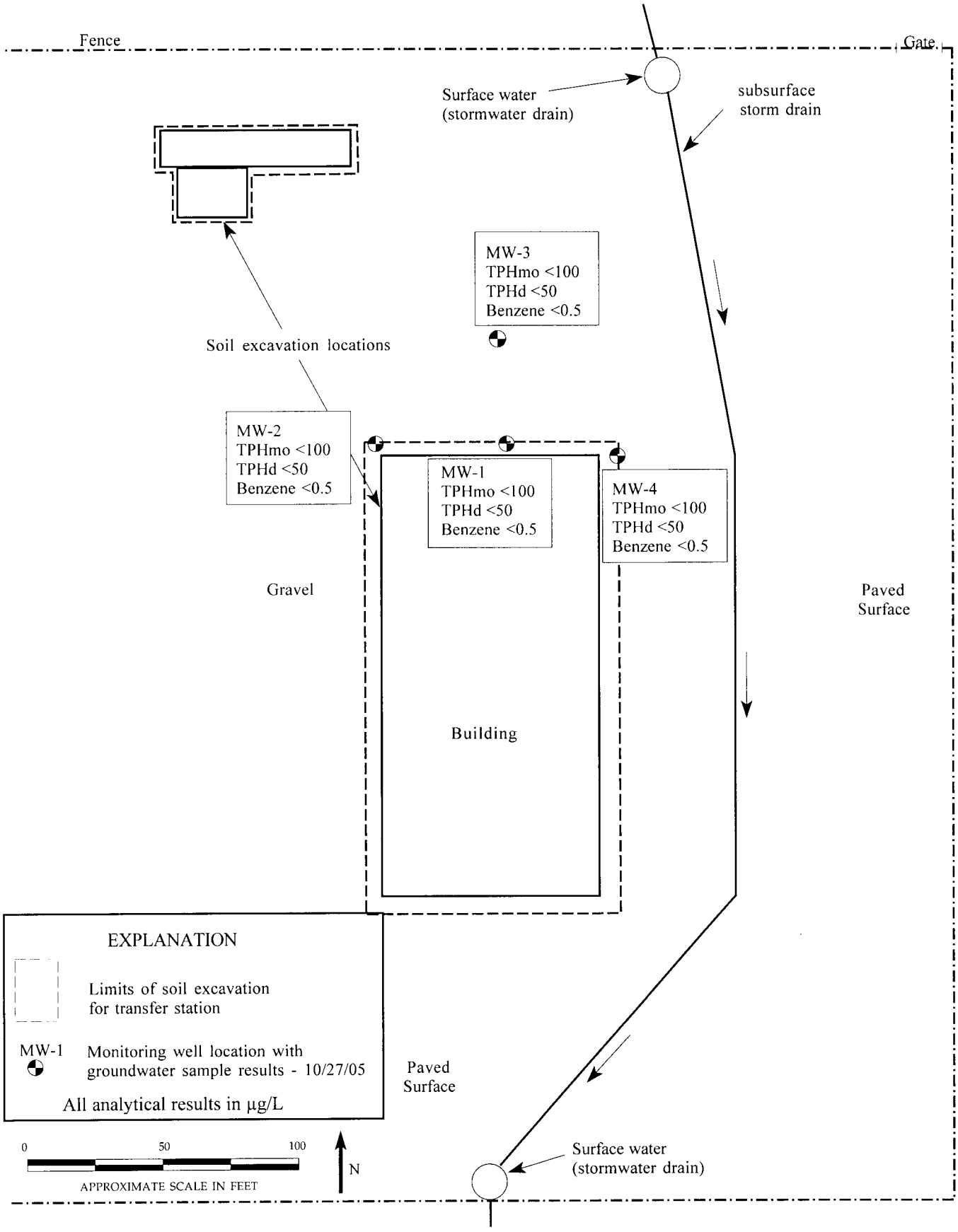



**Groundwater Elevations and Gradient - 10/27/05**

Former Beaver Lumber Company
1220 Fifth Street
Arcata, California

BLUE ROCK ENVIRONMENTAL, INC.

| Project No. | Report Date | Figure |
|---|---|---|
| NC-1 | 11/05 | 3c |




**Dissolved-Phase Hydrocarbon Distribution - 10/27/05**

Former Beaver Lumber Company
1220 Fifth Street
Arcata, California

BLUE ROCK ENVIRONMENTAL, INC.

| Project No. | Report Date | Figure |
|---|---|---|
| NC-1 | 11/05 | 4 |

**First-Order Decay Rates of Dissolved-Phase Contaminants 1/05 - 10/05**

Former Beaver Lumber Company, 1220 Fifth Street, Arcata, CA

Blue Rock Project # NC-001

| Well | TPHmo (%/day) |
|---|---|
| MW-1 | -0.42 |
| MW-2 | -0.17 |
| MW-4 | -0.33 |

See attached decay rate graph

TPHmo = Total Petroleum Hydrocarbons as motor oil

**Chart 1**
**Dissolved-Phase Hydrocarbon Concentrations vs. Time for MW-1**
Former Beaver Lumber Company
1220 Fifth Street
Arcata, CA

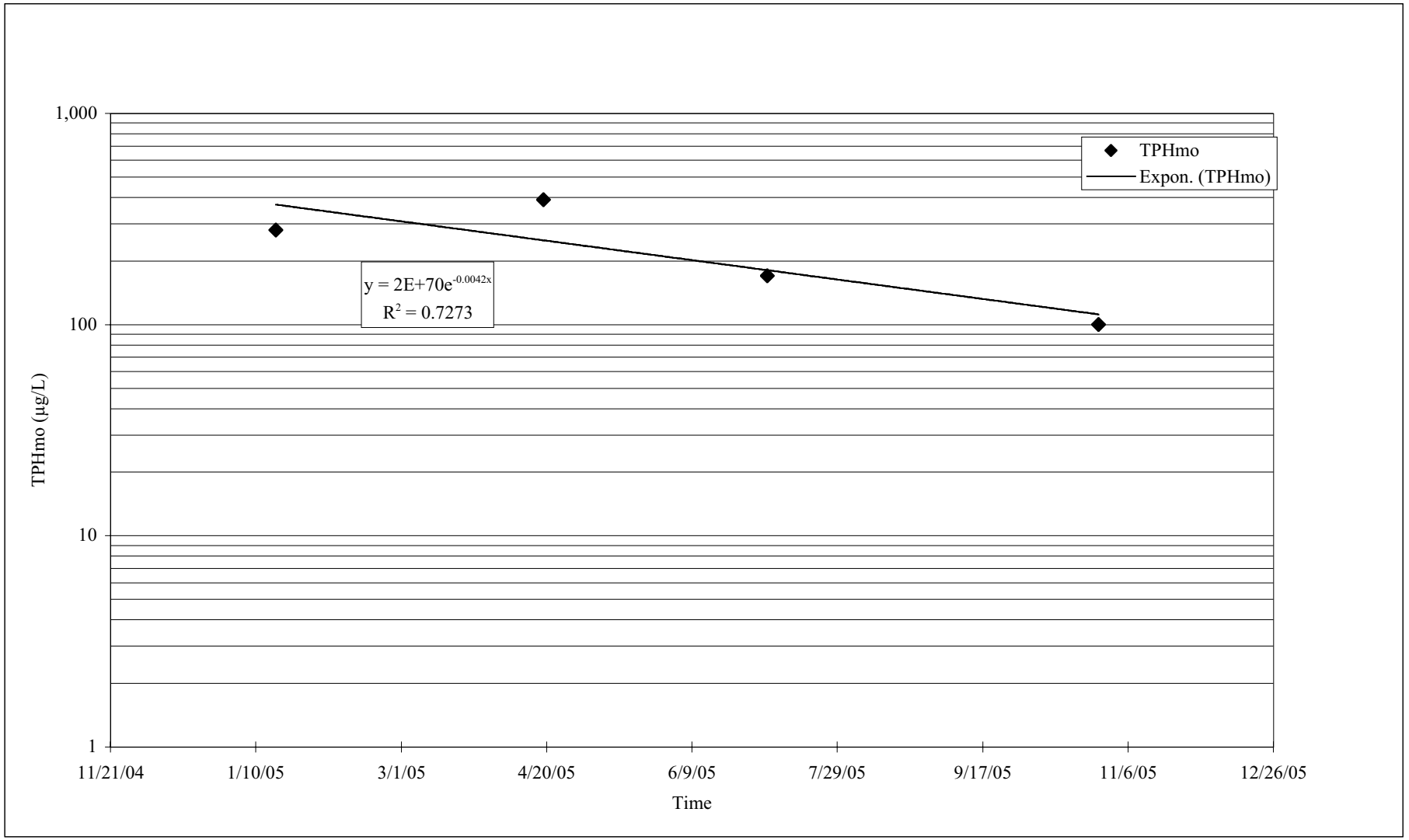


**Chart 2**
**Dissolved-Phase Hydrocarbon Concentrations vs. Time for MW-2**
Former Beaver Lumber Company
1220 Fifth Street
Arcata, CA

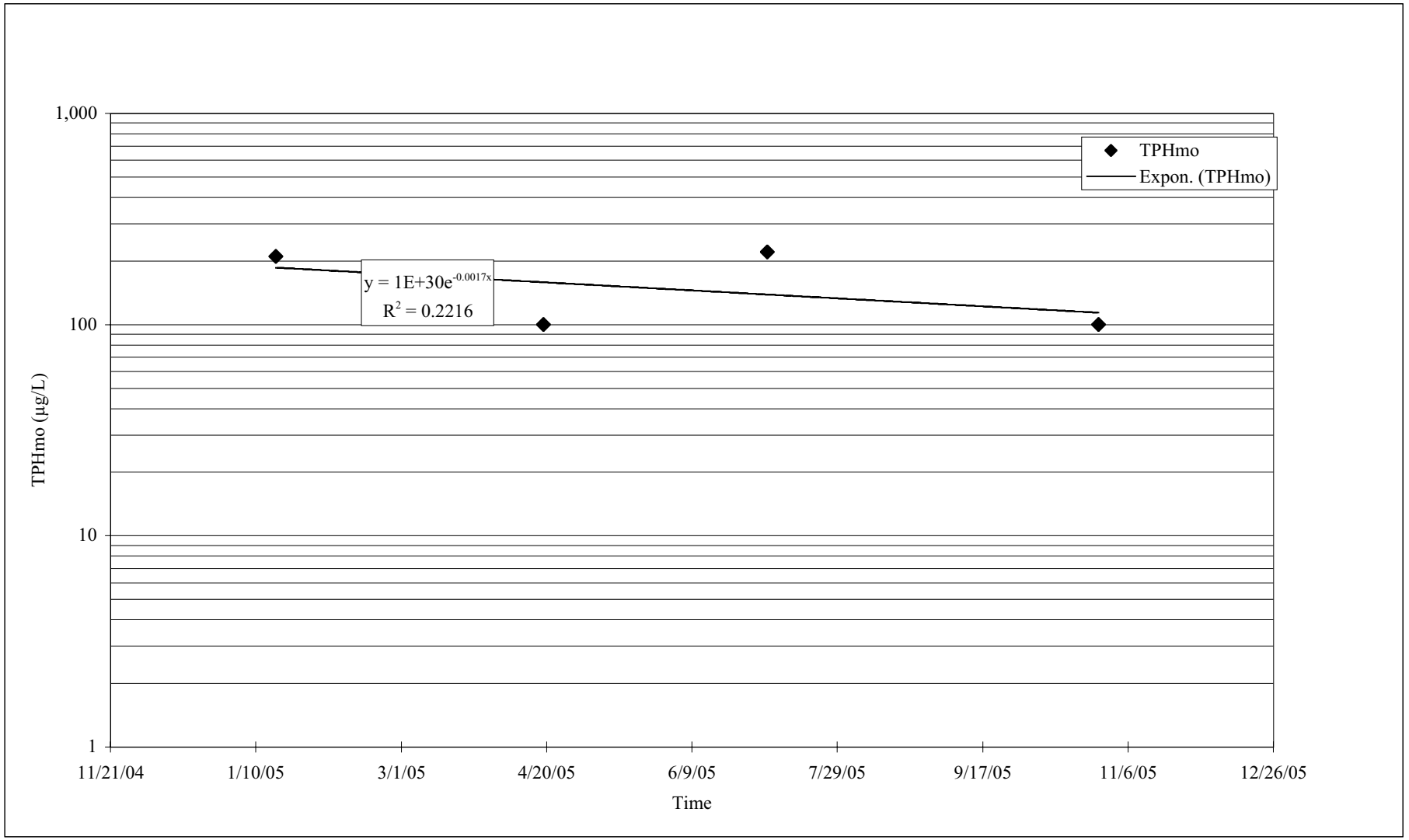
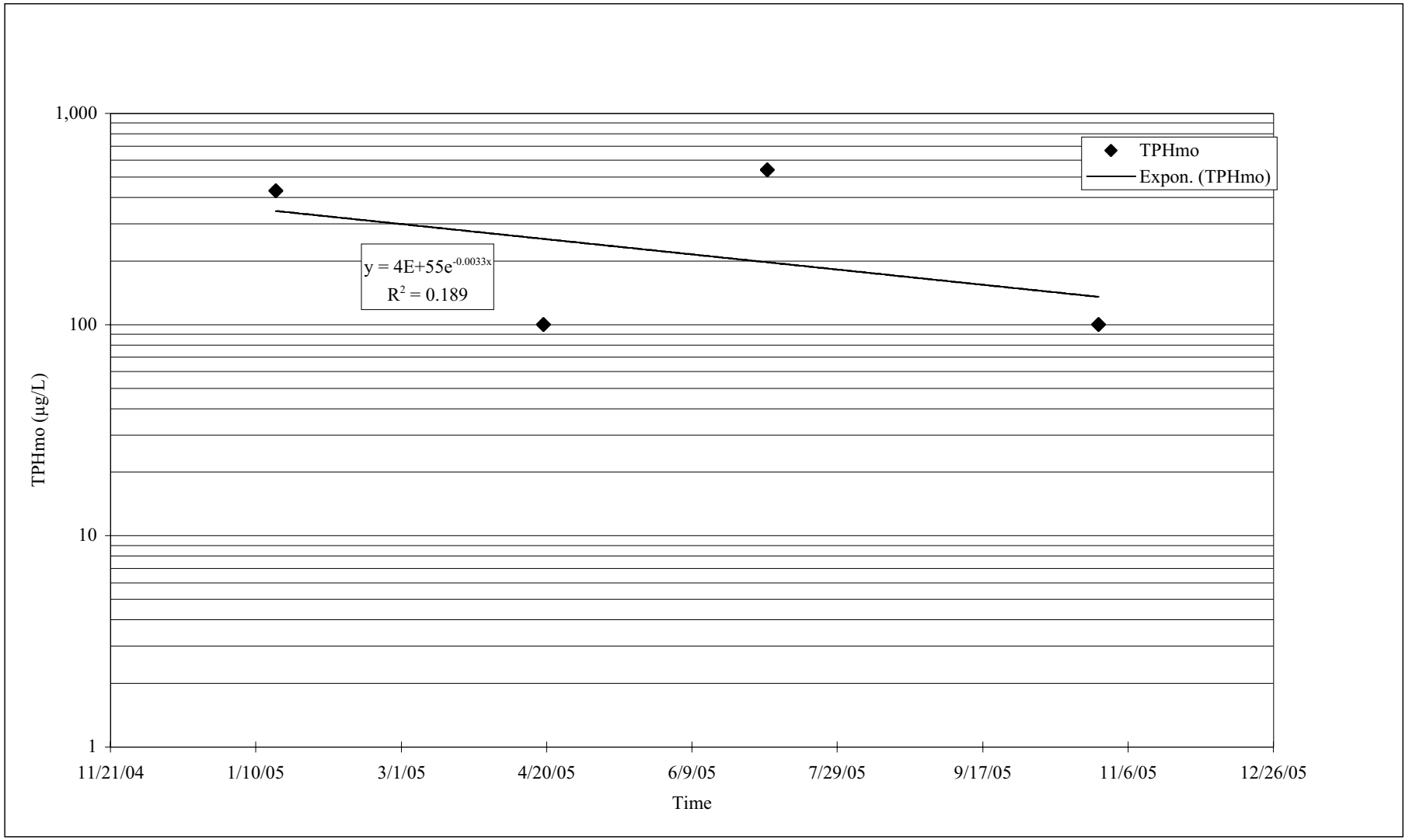


**Chart 3**
**Dissolved-Phase Hydrocarbon Concentrations vs. Time for MW-4**
Former Beaver Lumber Company
1220 Fifth Street
Arcata, CA



# GAGING DATA/PURGE CALCULATIONS

**Job No.:** NC-1 **Location:** 1220 5TH St. Arcata **Date:** 8/19/05 **Tech(s):** JL

| WELL NO. | DIA. (in.) | DTB (ft.) | DTW (ft.) | ST (ft.) | CV (gal.) | PV (gal.) | SPH (ft.) | NOTES |
|---|---|---|---|---|---|---|---|---|
| MW-1 | 2" | 14.36 | 5.08 | | | | | |
| MW-2 | ↓ | 14.46 | 4.61 | | | | | |
| MW-3 | | 14.59 | 4.51 | | | | | |
| MW-4 | | 14.49 | 5.66 | | | | | |
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**Explanation:**
DIA. = Well Diameter
DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW)
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV,
well development 10 x CV)
SPH = Thickness of Separate Phase Hydrocarbons

**Conversion Factors (cf):**
2 in. dia. well cf = 0.16 gal./ft.
4 in. dia. well cf = 0.65 gal./ft.
6 in. dia. well cf = 1.44 gal./ft.

BLUE ROCK
ENVIRONMENTAL, INC.

# GAGING DATA/PURGE CALCULATIONS

**Job No.:** NC-1 **Location:** 1220 5TH St. Arcata **Date:** 9/14/05 **Tech(s):** JL

| WELL NO. | DIA. (in.) | DTB (ft.) | DTW (ft.) | ST (ft.) | CV (gal.) | PV (gal.) | SPH (ft.) | NOTES |
|---|---|---|---|---|---|---|---|---|
| MW-1 | 2" | 14.36 | 5.45 | | | | | |
| MW-2 | ↓ | 14.46 | 4.98 | | | | | |
| MW-3 | ↓ | 14.59 | 5.13 | | | | | |
| MW-4 | ↓ | 14.49 | 6.05 | | | | | |
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**Explanation:**
DIA. = Well Diameter
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BLUE ROCK
ENVIRONMENTAL, INC.

# GAGING DATA/PURGE CALCULATIONS

**Job No.:** NC-1 **Location:** 1220 5th st. Arcadia CA **Date:** 10/27/05 **Tech(s):** SF + JL

| WELL NO. | DIA. (in.) | DTB (ft.) | DTW (ft.) | ST (ft.) | CV (gal.) | PV (gal.) | SPH (ft.) | NOTES |
|---|---|---|---|---|---|---|---|---|
| MW-1 | 2" | 15.00 | 5.98 | 9.02 | 1.44 | 4.32 | 0 | |
| MW-2 | ↓ | 15.00 | 5.57 | 9.43 | 1.50 | 4.50 | ↓ | |
| MW-3 | ↓ | 15.00 | 4.98 | 10.02 | 1.60 | 4.80 | ↓ | |
| MW-4 | ↓ | 15.00 | 6.24 | 8.76 | 1.40 | 4.20 | ↓ | |
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**Explanation:**
DIA. = Well Diameter
DTB = Depth to Bottom
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well development 10 x CV)
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**Conversion Factors (cf):**
2 in. dia. well cf = 0.16 gal./ft.
4 in. dia. well cf = 0.65 gal./ft.
6 in. dia. well cf = 1.44 gal./ft.

BLUE ROCK
ENVIRONMENTAL, INC.

# PURGING DATA



**Job No.:** NC-1 **Location:** Beaver Lumber **Date:** 10/27/05 **Tech:** JL

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH | |
|---|---|---|---|---|---|---|
| MW-1 | | | --- | --- | --- | Sample for: |
| Calc. purge | 12:00 | 0.25 | 791 | 60.1 | 7.02 | TPHg TPHd 8260 |
| volume | 12:05 | 2.25 | 820 | 59.7 | 6.72 | BTEX MTBE Metals |
| 4.32 | 12:10 | 4.35 | 843 | 59.6 | 6.61 | Purging Method: |
| | | | | | | PVC bailer / Pump |
| COMMENTS: color, turbidity, recharge, sheen | | | | | | Sampling Method: |
| clear / mod. / mod. / no sheen / no odor | | | | | | Dedicated / Disposable bailer |
| | | | | | | Sample at: 12:15 |

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH | |
|---|---|---|---|---|---|---|
| MW-2 | | | --- | --- | --- | Sample for: |
| Calc. purge | 12:40 | 0.25 | 737 | 61.6 | 7.13 | TPHg TPHd 8260 |
| volume | 12:45 | 2.25 | 719 | 62.0 | 6.99 | BTEX MTBE Metals |
| 4.50 | 12:50 | 4.50 | 705 | 61.8 | 6.96 | Purging Method: |
| | | | | | | PVC bailer / Pump |
| COMMENTS: color, turbidity, recharge, sheen | | | | | | Sampling Method: |
| clear / mod. / mod. / no sheen / no odor | | | | | | Dedicated / Disposable bailer |
| | | | | | | Sample at: 12:55 |

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH | |
|---|---|---|---|---|---|---|
| MW-3 | | | --- | --- | --- | Sample for: |
| Calc. purge | 13:00 | 0.25 | 1148 | 62.6 | 6.34 | TPHg TPHd 8260 |
| volume | 13:05 | 2.50 | 1156 | 62.6 | 6.40 | BTEX MTBE Metals |
| 4.80 | 13:10 | 4.80 | 1158 | 62.4 | 6.43 | Purging Method: |
| | | | | | | PVC bailer / Pump |
| COMMENTS: color, turbidity, recharge, sheen | | | | | | Sampling Method: |
| clear / mod. / mod. / no sheen / no odor | | | | | | Dedicated / Disposable bailer |
| | | | | | | Sample at: 13:15 |

# PURGING DATA



**Job No.:** NC-1 **Location:** Beaver Lumber **Date:** 10/27/05 **Tech:** JL

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|---|---|---|---|---|---|
| MW-4 | | | --- | --- | --- |
| Calc. purge | 12:20 | 0.25 | 864 | 62.3 | 6.44 |
| volume | 12:25 | 2.00 | 889 | 62.5 | 6.71 |
| 4.20 | 12:30 | 4.20 | 890 | 62.6 | 6.73 |
| | | | | | |

COMMENTS: color, turbidity, recharge, sheen

clear / mod / mod / no sheen / no odor

Sample for: TPHg TPHd 8260 BTEX MTBE Metals

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

Sample at: 12:35

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|---|---|---|---|---|---|
| | | | --- | --- | --- |
| Calc. purge | | | | | |
| volume | | | | | |
| | | | | | |
| | | | | | |

COMMENTS: color, turbidity, recharge, sheen

Sample for: TPHg TPHd 8260 BTEX MTBE Metals

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

Sample at:

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|---|---|---|---|---|---|
| | | | --- | --- | --- |
| Calc. purge | | | | | |
| volume | | | | | |
| | | | | | |
| | | | | | |

COMMENTS: color, turbidity, recharge, sheen

Sample for: TPHg TPHd 8260 BTEX MTBE Metals

Purging Method: PVC bailer / Pump

Sampling Method: Dedicated / Disposable bailer

Sample at:

KIFF Analytical LLC

Report Number : 46644
Date : 11/1/2005

Scott Ferriman
Blue Rock Environmental, Inc.
535 3rd Street, Suite 100
Eureka, CA 95501

Subject : 4 Water Samples
Project Name : Beaver Lumber
Project Number : NC-1

Dear Mr. Ferriman,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF Analytical LLC

Report Number : 46644

Date : 11/1/2005

Project Name : **Beaver Lumber**

Project Number : **NC-1**

Sample : **MW-1** Matrix : Water Lab Number : 46644-01

Sample Date :10/27/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|
| **Benzene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Toluene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Ethylbenzene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Total Xylenes** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| Toluene - d8 (Surr) | 106 | | % Recovery | EPA 8260B | 10/31/2005 |
| 4-Bromofluorobenzene (Surr) | 106 | | % Recovery | EPA 8260B | 10/31/2005 |
| **TPH as Diesel (w/ Silica Gel)** | **< 50** | 50 | ug/L | M EPA 8015 | 10/29/2005 |
| **TPH as Motor Oil (w/ Silica Gel)** | **< 100** | 100 | ug/L | M EPA 8015 | 10/29/2005 |
| Octacosane (Diesel Surrogate) | 102 | | % Recovery | M EPA 8015 | 10/29/2005 |

Sample : **MW-2** Matrix : Water Lab Number : 46644-02

Sample Date :10/27/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|
| **Benzene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Toluene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Ethylbenzene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Total Xylenes** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| Toluene - d8 (Surr) | 107 | | % Recovery | EPA 8260B | 10/31/2005 |
| 4-Bromofluorobenzene (Surr) | 105 | | % Recovery | EPA 8260B | 10/31/2005 |
| **TPH as Diesel (w/ Silica Gel)** | **< 50** | 50 | ug/L | M EPA 8015 | 10/29/2005 |
| **TPH as Motor Oil (w/ Silica Gel)** | **< 100** | 100 | ug/L | M EPA 8015 | 10/29/2005 |
| Octacosane (Diesel Surrogate) | 104 | | % Recovery | M EPA 8015 | 10/29/2005 |

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF Analytical LLC

Report Number : 46644

Date : 11/1/2005

Project Name : **Beaver Lumber**

Project Number : **NC-1**

Sample : **MW-3** Matrix : Water Lab Number : 46644-03

Sample Date :10/27/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|
| **Benzene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Toluene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Ethylbenzene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| **Total Xylenes** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| Toluene - d8 (Surr) | 106 | | % Recovery | EPA 8260B | 10/31/2005 |
| 4-Bromofluorobenzene (Surr) | 106 | | % Recovery | EPA 8260B | 10/31/2005 |
| **TPH as Diesel (w/ Silica Gel)** | **< 50** | 50 | ug/L | M EPA 8015 | 10/29/2005 |
| **TPH as Motor Oil (w/ Silica Gel)** | **< 100** | 100 | ug/L | M EPA 8015 | 10/29/2005 |
| Octacosane (Diesel Surrogate) | 106 | | % Recovery | M EPA 8015 | 10/29/2005 |

Sample : **MW-4** Matrix : Water Lab Number : 46644-04

Sample Date :10/27/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|
| **Benzene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 11/1/2005 |
| **Toluene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 11/1/2005 |
| **Ethylbenzene** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 11/1/2005 |
| **Total Xylenes** | **< 0.50** | 0.50 | ug/L | EPA 8260B | 11/1/2005 |
| Toluene - d8 (Surr) | 106 | | % Recovery | EPA 8260B | 11/1/2005 |
| 4-Bromofluorobenzene (Surr) | 106 | | % Recovery | EPA 8260B | 11/1/2005 |
| **TPH as Diesel (w/ Silica Gel)** | **< 50** | 50 | ug/L | M EPA 8015 | 10/29/2005 |
| **TPH as Motor Oil (w/ Silica Gel)** | **< 100** | 100 | ug/L | M EPA 8015 | 10/29/2005 |
| Octacosane (Diesel Surrogate) | 106 | | % Recovery | M EPA 8015 | 10/29/2005 |

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

Report Number : 46644

**QC Report : Method Blank Data**

Date : 11/1/2005

Project Name : **Beaver Lumber**

Project Number : **NC-1**

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|
| TPH as Diesel (w/ Silica Gel) | < 50 | 50 | ug/L | M EPA 8015 | 10/29/2005 |
| TPH as Motor Oil (w/ Silica Gel) | < 100 | 100 | ug/L | M EPA 8015 | 10/29/2005 |
| Octacosane (Diesel Surrogate) | 107 | | % | M EPA 8015 | 10/29/2005 |
| Benzene | < 0.50 | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| Toluene | < 0.50 | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| Ethylbenzene | < 0.50 | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| Total Xylenes | < 0.50 | 0.50 | ug/L | EPA 8260B | 10/31/2005 |
| Toluene - d8 (Surr) | 105 | | % | EPA 8260B | 10/31/2005 |
| 4-Bromofluorobenzene (Surr) | 107 | | % | EPA 8260B | 10/31/2005 |

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 46644

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Date : 11/1/2005

Project Name : **Beaver Lumber**

Project Number : **NC-1**

| Parameter | Spiked Sample | Sample Value | Spike Level | Spike Dup. Level | Spiked Sample Value | Duplicate Spiked Sample Value | Units | Analysis Method | Date Analyzed | Spiked Sample Percent Recov. | Duplicate Spiked Sample Percent Recov. | Relative Percent Diff. | Spiked Sample Percent Recov. Limit | Relative Percent Diff. Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPH as Diesel | Blank | <50 | 1000 | 1000 | 715 | 734 | ug/L | M EPA 8015 | 10/29/05 | 71.5 | 73.4 | 2.66 | 70-130 | 25 |
| Benzene | 46681-02 | <0.50 | 40.0 | 40.0 | 40.4 | 40.0 | ug/L | EPA 8260B | 10/31/05 | 101 | 100 | 1.09 | 70-130 | 25 |
| Toluene | 46681-02 | <0.50 | 40.0 | 40.0 | 43.6 | 42.9 | ug/L | EPA 8260B | 10/31/05 | 109 | 107 | 1.59 | 70-130 | 25 |

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 46644

**QC Report : Laboratory Control Sample (LCS)**

Date : 11/1/2005

Project Name : **Beaver Lumber**

Project Number : **NC-1**

| Parameter | Spike Level | Units | Analysis Method | Date Analyzed | LCS Percent Recov. | LCS Percent Recov. Limit |
|---|---|---|---|---|---|---|
| Benzene | 40.0 | ug/L | EPA 8260B | 10/31/05 | 98.2 | 70-130 |
| Toluene | 40.0 | ug/L | EPA 8260B | 10/31/05 | 107 | 70-130 |

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

**KIFF Analytical LLC**

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 46644

Page 1 of 1

# Chain-of-Custody Record and Analysis Request

| | |
|---|---|
| Project Contact (Hardcopy or PDF To): Scott Ferriman | California EDF Report? ☒ Yes ☐ No |
| Company / Address: Blue Rock Env. Inc. 535 3rd st. Ste.100 Eureka CA | Sampling Company Log Code: |
| Phone #: (707)441-1934 Fax #: (707)441-1949 | Global ID: T0602393109 |
| Project #: NC-1 P.O. #: | EDF Deliverable To (Email Address): Scott@blueRockenv.com |
| Project Name: Beaver Lumber | Sampler Signature: Jamee Lindeman |
| Project Address: 1220 5th St. Arcata, Ca | |

| Sample Designation | Sampling: Date | Sampling: Time | Container: 40 ml VOA | Sleeve | Poly | Glass | Tedlar | Preservative: HCl | $HNO_3$ | None | Matrix: Water | Soil | Air | MTBE (EPA 8260B) per EPA 8021 level @ 5.0 ppb | MTBE (EPA 8260B) @ 0.5 ppb | BTEX (EPA 8260B) | TPH Gas (EPA 8260B) | 5 Oxygenates (EPA 8260B) | 7 Oxygenates (EPA 8260B) | Lead Scav.(1,2 DCA & 1,2 EDB-EPA 8260B) | Volatile Halocarbons (EPA 8260B) | Volatile Organics Full List (EPA 8260B) | Volatile Organics (EPA 524.2 Drinking Water) | TPH as Diesel (EPA 8015M) Silica gel | TPH as Motor Oil (EPA 8015M) Silica gel | Total Lead (EPA 6010) | W.E.T. Lead (STLC) | | | | TAT: 12 hr ☐ 24 hr ☐ 48 hr ☐ 72 hr ☒ 1 wk | For Lab Use Only |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 10/27/05 | 12:15 | 3 | | | | | X | | | X | | | | | X | | | | | | | | X | X | | | | | | X | -01 |
| MW-2 | ↓ | 12:55 | ↓ | | | | | ↓ | | | ↓ | | | | | ↓ | | | | | | | | ↓ | ↓ | | | | | | ↓ | -02 |
| MW-3 | | 13:15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -03 |
| MW-4 | ↓ | 12:35 | ↓ | | | | | ↓ | | | ↓ | | | | | ↓ | | | | | | | | ↓ | ↓ | | | | | | ↓ | -04 |

| Relinquished by: | Date | Time | Received by: |
|---|---|---|---|
| Jamee Lindeman | 10/27/05 | | Fed Ex |
| Relinquished by: | Date | Time | Received by: |
| | | | |
| Relinquished by: | Date | Time | Received by Laboratory: |
| | 102805 | 1050 | Gayle Cayton Kiff Analytical |

Remarks:

Bill to:

For Lab Use Only: Sample Receipt

| Temp °C | Initials | Date | Time | Therm. ID # | Coolant Present |
|---|---|---|---|---|---|
| 4° | GAL | 102805 | 1050 | IR-1 | (Yes) / No |

Distribution: White - Lab; Pink - Originator
Rev: 051805